

IN THE CLAIMS

1. (Currently Amended) An acryl-silicone hybrid impact modifier having improved impact resistance and coloring property comprising:

(A) an acryl seed latex,

~~(B) an acryl-silicone hybrid rubber core prepared by condensation reaction of~~ (B)(i) an continuous acryl rubber core placed on the acryl seed latex of (A) by emulsion polymerization reaction between 0.01 to 10 parts by weight of the acryl seed latex of (A), 57.07 to 79.40 parts by weight of an alkyl acrylate having an alkyl group of 1 to 8 carbon atoms, and 0.43 to 0.60 parts by weight of a cross-linking monomer and,

(B)(ii) an acryl-silicone rubber core having a Latex InterPenetrating Network (LIPN) morphology in which a discrete polyorganosiloxane rubber phase is dispersed locally onto an inner part and surface of the continuous acryl rubber core (B)(i), and the glass transition temperature thereof is -120°C to 25°C, by swelling

2.5 to 45 parts by weight of a cyclic organosiloxane precursor of:

0.98 to 24.50 parts by weight of a 3 to 7 member cyclic organosiloxane,

0.15 to 0.38 parts by weight of an organosiloxane cross-linking having an alkyl group of 3 or more carbon atoms, and

0.05 to 0.45 parts by weight of an organosiloxane graft-linking agent
in 55.0 to 97.5 parts by weight of the acryl rubber core, then condensing the swells, in the presence of with an acid catalyst selected from the group consisting of alkylbenzene sulfonic acid and alkylsulfonic acid, and

(C) an alkyl methacrylate graft shell prepared by placed on the acryl-silicone hybrid rubber core (B)(ii) by emulsion graft polymerization reaction of 60 to 94 parts by weight of the acryl-silicone hybrid rubber core, 7.5 to 20 parts by weight of an alkyl methacrylate having an alkyl group of 1 to 4 carbon atoms, and 0.1 to 20 parts by weight of an aiding monomer[.]]

wherein the acryl seed latex (A) is composed of:

(i) 60 to 99 parts by weight of a vinyl monomer;

(ii) 0.5 to 30 parts by weight of a hydrophilic monomer; and

(iii) 0.5 to 5 parts by weight cross-linking monomer;

wherein the acryl rubber core (B)(i) is composed of : (a) 57.05 to 79.40 parts by weight of an alkyl acrylate in which the alkyl group has 1 to 8 carbon atoms; and (b) 0.43 to 0.60 parts

by weight of a cross-linking monomer, based on 0.01 to 10 parts by weight of the acryl seed latex (A);

— wherein the silicone rubber core (B)(ii) is composed of (a) 0.98 to 24.50 parts by weight of a cyclic organosiloxane precursor of one or more selected from the group consisting of octamethylecyclotetrasiloxane, decamethylecyclopentasiloxane, dodecamethylecyclohexasiloxane, and tetramethyltetraphenylecyclotetrasiloxane; (b) 0.15 to 0.38 parts by weight of an organosiloxane cross-linking agent of one or more selected from the group consisting of tetramethoxysilane, tetraethoxysilane, and triethoxymethylsilane; and (c) 0.05 to 0.45 parts by weight of an organosiloxane graft-linking agent selected from the group consisting of gamma-methacryloxypropyltrimethoxysilane, mercaptopropyltrimethoxymethylsilane, mercaptopropyltrimethoxysilane, and tetravinyltetramethylecyclotetrasiloxane; and wherein the alkyl methacrylate shell (C) is composed of 7.5 to 20 parts by weight of alkyl methacrylate, wherein the alkyl group has 1 to 4 carbon atoms.

2. (Canceled)

3. (Currently amended) The ~~acryl-silicone hybrid~~ impact modifier having improved impact resistance and coloring property according to Claim 1, wherein said (A) ~~(i)~~ acrylic seed latex comprises a vinyl monomer ~~is of~~ one or more ~~kinds of~~ compounds selected from the group consisting of styrene, α -methylstyrene, vinyl toluene, and 3,4-dichlorostyrene.

4. (Currently Amended) The ~~acryl-silicone hybrid~~ impact modifier having improved impact resistance and coloring property ~~of according to~~ Claim 1, wherein said (A) ~~(ii)~~ acrylic seed latex comprises a hydrophilic monomer ~~is of~~ one or more ~~kinds of~~ compounds selected from the group consisting of an alkyl acrylate ~~including~~ ethylacrylate, butylacrylate, and 2-ethylhexylacrylate; an alkyl methacrylate ~~including~~ methylmethacrylate, and benzylmethacrylate~~[[:]]~~; acrylonitrile~~[[:]]~~; hydroxymethylmethacrylate~~[[:]]~~; and glycidylmethacrylate; ~~and a cross linking monomer of one or more compounds selected from the group consisting of~~ divinylbenzene, 3-butanediol diacrylate, 1,3-butanediol dimethacrylate, 1,4-butanediol diacrylate, 1,4-butanediol dimethacrylate, allylacrylate, arylmethacrylate, trimethylolpropane triacrylate, tetraethyleneglycol diacrylate, and tetraethyleneglycol dimethacrylate.

5. and 6. (Canceled)

7. (Currently amended) The acryl-silicone hybrid impact modifier having improved impact resistance and coloring property according to Claim 1, wherein said ~~(B)~~ ~~(i)~~ ~~(a)~~-alkyl acrylate having an alkyl group of 1 to 8 carbon atoms is one or more ~~kinds of~~ compounds selected from the group consisting of methylacrylate, ethylacrylate, propylacrylate, isopropylacrylate, butylacrylate, hexylacrylate, octylacrylate, and 2-ethylhexylacrylate.

8. to 10. (Canceled)

11. (Currently amended) The ~~acryl-silicone hybrid~~ impact modifier having improved impact resistance and coloring property according to Claim 1, wherein said ~~(A)~~ ~~(iii)~~ ~~cross-linking monomer and~~ ~~(B)~~ ~~(i)~~ ~~(b)~~ cross-linking monomer is one or more ~~kinds of~~ compounds selected from the group consisting of divinylbenzene, 3-butanediol diacrylate, 1,3-butanediol dimethacrylate, 1,4-butanediol diacrylate, 1,4-butanediol dimethacrylate, allylacrylate, ~~arylmethacrylate~~ arylmethacrylate, trimethylolpropane triacrylate, tetraethyleneglycol diacrylate, and tetraethyleneglycol dimethacrylate.

12. (Canceled)

13. (Currently amended) The ~~acryl-silicone hybrid~~ impact modifier having improved impact resistance and coloring property according to Claim 1, wherein said ~~shell additionally includes 0.1 to 20 parts by weight of an aiding monomer which is~~ one or more ~~kinds of~~ compounds selected from the group consisting of methylacrylate, ethylacrylate, butylacrylate, acrylonitrile, and methacrylonitrile ~~based on the total monomers of the shell of 100 parts by weight.~~

14.-19. (Canceled)

20. (Currently amended) A vinyl chloride resin composition having improved impact resistance and coloring property comprising 80 to 99 parts by weight of a vinyl chloride resin, and 1 to 20 parts by weight of said ~~acryl-silicone hybrid~~ impact modifier of Claim 1.

21. and 22. (Canceled)

23. (New) The impact modifier having improved impact resistance and coloring property according to Claim 1, wherein said 3 to 7 member cyclic organosiloxane is one or more selected from octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, and tetramethyltetraphenylcyclotetrasiloxane; the organosiloxane cross-linking agent is one or more selected from group consisting of tetramethoxysilane, tetraethoxysilane, and triethoxymethylsilane; and the organosiloxane graft-linking agent is one or more selected from group consisting of gamma-methacryloxypropyltrimethoxysilane, mercaptopropyltrimethoxymethylsilane, mercaptopropyltrimethoxysilane, and tetravinyltetramethylcyclotetrasiloxane.